NATURAL RESOURCES CONSERVATION SERVICE
PACIFIC BASIN AREA
CONSERVATION PRACTICE STANDARD

IRRIGATION PIT OR REGULATING RESERVOIR, REGULATING RESERVOIR

(Number)
CODE 552B

DEFINITION

A small storage reservoir constructed to regulate or store a supply of water for irrigation.

PURPOSE

- To store water for relatively short periods to:
- Provide for regulating fluctuating flows in streams or canals.
- Provide suitable (usually larger) irrigation streams.
- Provide for improved management of irrigation water.
- Permit more efficient use of available labor.
- Avoid nighttime operation, and
- Provide storage for reuse irrigation systems.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies only to sites meeting all the following criteria and conditions:

1. The existing available irrigation stream is of such size that regulation is necessary to accomplish the intended purposes. For small irrigation wells, collection facilities are needed for efficient operation of the pumping plants.
2. Water must be stored to be used between times of rotation deliveries.
3. An adequate and dependable volume of good quality water is or can be made available.
4. Topographic, geologic, and soil conditions are suitable for the practical construction of a regulating reservoir having an adequate storage capacity. Pervious soils in the reservoir area can be sealed so that seepage losses are not excessive.
5. If surface runoff enters the reservoir, the contributing drainage area is or can be protected against erosion so that normal sedimentation does not materially shorten the planned life of the reservoir.

DESIGN CRITERIA

Capacity. Irrigation regulating reservoirs shall have a usable capacity sufficient to permit the existing irrigation stream to be regulated so that irrigation water can be applied with a reasonably high efficiency. In computing capacity requirements, due consideration shall be given, where applicable, to diverted inflow, surface runoff, precipitation, evaporation, and seepage. Excessive seepage losses shall be prevented by the use of an adapted method of sealing or lining. Additional capacity shall be provided, as necessary, for sediment storage.

Capacity requirements for regulating reservoirs used as part of a system for collecting water from two or more small wells shall be based on the discharge capacities of the contributing wells and on the operation frequency of the sprinkler system.

Reservoir design. Irrigation regulating reservoirs created by earthen dams, enclosed embankments, excavated pits, and the related appurtenant structures shall be designed according to the standard for the Pacific Basin standard, Pond (378).

Concrete and steel regulating reservoirs shall be designed according to the practice standard for the Pacific Basin standard, Water Facility (614).

Inlet Protection. If the inflow enters the reservoir, the side slope of the reservoir shall be protected against erosion by the use of a pipe inlet or some other suitable structure. The capacity of the inlet structure shall be no less than that required to accommodate the maximum anticipated rate of inflow.

Overflow Protection. An overflow protection structure having a capacity equal to or greater than the inlet stream shall be provided for an enclosed embankment. This structure may be designed and installed in combination with the outlet works.

Outlet works. Outlet works shall be provided for the controlled release of irrigation water. The outlet works may consist of a gated conduit through or over the embankment for gravity flow to the irrigated area or to a pumping plant. They may also consist of a pumping plant designed to lift water directly from the reservoir basin.

The capacity of the outlet works shall be no less than that required to provide the outflow rate needed to meet peak period irrigation system demands.

Earthen irrigation regulating reservoirs shall be designed in accordance with the requirements for the Pacific Basin standard, Pond (378).

Concrete and steel regulating reservoirs shall be designed in accordance with the requirements for the Pacific Basin standard, Water Facility (614).

CONSIDERATIONS

This practice may adversely affect cultural resources. Planning, installation and maintenance must comply with GM 420, Part 401.

WATER QUANTITY

Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.

Effects on downstream flows or aquifers that would affect other water uses or users.

Potential use for irrigation water management.

WATER QUALITY

Effects of erosion and the movement of sediment, pathogens, and the soluble and sediment-attached substances carried by runoff.

Effects on the movement of dissolved substances to ground water.

Short-term and construction-related effects on the quality of downstream water courses.

Potential of uncovering or redistributing toxic material.

Effects on wetlands or water-related wildlife habitats.

Effects on the visual: quality of water resources.

PLANS AND SPECIFICATIONS

Plans and specifications for irrigation regulating reservoirs shall be in keeping with this standard and shall describe the requirements for properly installing the practice to achieve its intended purpose.

Preliminary to developing design and construction plans, survey data must be obtained. Such data shall include sufficient points to develop and show the structure foot print, profile, cross sections, locate physical features (road, trees, livestock facilities, etc.) and location of spoil placement. All surveys will be in accordance with Chapter 1 of the EFH and Technical Reference 62.

A soil investigation to determine the adequacy of soils for pond lining or the soils bearing strength and foundation and wall loads for waste buildings. USDA NRCS Soil Survey and Chapter 4 of the EFH shall be used for soils classification and properties. The soils information may be conveyed on the plans and specifications, to facilitate installation or communicate limitations.

Construction plans shall include a plan view drawn to scale, facility sectional views and spoil disposal requirements as a minimum. If additional conservation practices are included in the project for water management and water quality concerns, the information necessary to construct theses practices will

also be conveyed on the plans. Development of plans will be guided by EFH - Chapter 5.

Incidental information necessary to construct the job will need to be either communicated in the construction specifications or carried on the construction drawings in the form of construction notes.

OPERATION AND MAINTENANCE

Operation and Maintenance Plans shall be prepared for each job. Such plans shall encompass the daily operation and maintenance requirements and parties responsible to ensure proper functioning and performance of irrigation pit or regulating reservoir. Reservoir storage and discharge capacity shall be given.